## REMARKS

Upon entry of the present amendment, a new title will have been submitted for entry into the present application. Further, several paragraphs of the specification will have been amended to enable them to even more clearly define and describe the features of the present invention. The amendments to the specification do not introduce new matter but merely clarify the features and operations of the disclosed invention.

Further, claims 1 and 17 will have been amended to clarify the recitations of the present application. Accordingly, claims 1-9, 11-24, 26 and 27 will remain pending in the present application and are respectfully resubmitted for consideration and examination herein.

In view of the present response, Applicants respectfully request reconsideration and withdrawal of each of the outstanding objections and rejection set forth in the above mentioned Official Action, together with an indication of the allowability of all the claims pending in the present application, in due course. Such action is now believed to be appropriate and proper and is thus respectfully requested.

In the outstanding Official Action, the Examiner asserted that the new title of the invention is not descriptive. The Examiner again required submission of a new title that is clearly indicative of the invention to which the claims are directed.

In this regard, Applicants wish to make of record a brief telephone interview conducted in the present application regarding the title of the application on January 12, 2009. During the above noted interview, Applicants' undersigned representative discussed, with the Examiner, the precise nature of the inadequacy in the title. Based on the above noted discussion, Applicants have, by the present response, amended the title to overcome the Examiner's concerns with

respect thereto. The Examiner is respectively thanked for her cooperation and courtesy during the above noted interview.

The newly submitted title is respectfully submitted to clearly indicate the invention to which the claims are directed and particularly includes "synchronization of magnetic flux generation", which is, inter alia, recited in the pending claims, as requested by the Examiner. Accordingly, Applicants respectfully request reconsideration and withdrawal of the outstanding objection to the title of the present application.

In the outstanding Official Action, the Examiner objected to all of the claims in the present application. The Examiner asserted that it is unclear how continuous rotation of the core allows proper fixing.

Applicants respectfully traverse the above noted objection and submit that the disclosure of the present application, upon which the above noted claim recitation is based, is clear and accurately describes this feature of Applicants' invention. Nevertheless, in order to address the Examiner's concerns, by the present response, Applicants have amended the recitation of the "magnetic flux adjuster" in claims 1 and 17 so as to clarify that, according to the present invention, the rotation of the opposed core 116 (i.e. members 116a and 116b), which is positioned inside of the retaining roller 113, occurs during a fixing operation. In so doing, the rotation of the core 116 converts the spatial distribution of magnetic flux into a time distribution. In this regard, the Examiner's attention is respectfully directed to figures 8, 9, 10a and 10b, as well as to the detailed description of the present application at page 35, line 19 through page 36, line 14.

In particular, when the surfaces of opposed core members 116a and 116b of the opposed core 116 are positioned on an opposite side of the fixing belt 112 from the excitation core 121,

the core members are close to the fixing belt. Accordingly, the magnetic permeability of the area through which the magnetic flux passes increases and the magnetoresistance of this area decreases. Thus, the magnetic coupling between the exciting coil 120 and the fixing belt 112 becomes improved and the heat production temperature of the fixing belt 112 in this area is raised. On the other hand, when, due to the rotation of the opposed core, the surfaces of the core members 116a and 116b are spaced from the fixing belt 112, the magnetic flux passes through the air which has little magnetic permeability. Accordingly, in this case, the heat production temperature of the fixing belt 112 decreases.

Thus, when the exciting coil 120 heats a rotational portion (or phase) at which the area "a'' of opposed core 116 is opposite the exciting coil 120, the central narrow paper passage area is strongly heated. When, due to the rotation of the opposed core 116, the area "b" of the opposed core 116 becomes positioned opposite the exciting coil 120, the end narrow paper non-passage areas are strongly heated.

Accordingly, the caloric value distribution of the fixing belt 112 can be adjusted by having the opposed core 116 rotate continuously and by adjusting the timing of heating by the exciting coil in accordance with (i. e, in synchronization with) the rotational phase of the opposed core 116. This is a feature that, in the claimed combinations, clearly distinguishes the present invention from the applied prior art.

As noted above, while Applicants submit that the disclosure of the present application, which supports the above noted recitations, is clear and accurately describes this feature Applicants' invention, by the present response, Applicants have amended claims 1 and 17 to even more clearly define the above noted feature.

To further respond to the Examiner's query, Applicants note that, according to the disclosure of the present application, it is not the excitation core 121 which rotates during fixing, but the opposed core 116 (i.e. members 116a and 116b) which is provided within the retaining roller 113.

Accordingly, in view of the above noted explanation and clarification, Applicants respectfully submit that the basis for the Examiner's objection to the claims in the present application has been overcome and Applicants respectfully request an indication to such effect in the next Official Action in the present application.

In the outstanding Official Action, the Examiner rejected claims 1, 2, and 17-19 under 35 U.S.C. § 103(a) as being unpatentable over KAWASE et al. (U.S. Patent Application Publication No. 2003/0086736) in view of SEKIGUCHI (U.S. Patent Application Publication No. 2002/0158063).

Applicants respectfully traverse the above noted rejection and submit that it is inappropriate with respect to the combination of features recited in each of Applicants' pending claims. In particular, Applicants respectfully submit that the combination of features recited in independent claims 1 and 17 are not disclosed, taught, suggested or even rendered obvious by any proper combination of the above noted two references. Accordingly, Applicants respectfully request reconsideration and withdrawal of the outstanding rejection in view of the herein contained remarks and discussion.

Applicants' invention is directed to an image heating apparatus. Utilizing the image heating apparatus as defined in claim 1 as a nonlimiting example of Applicants' invention, the present invention is directed to an image heating apparatus that includes a rotatable heat producing medium that produces heat by action of magnetic flux and a magnetic flux generator

positioned proximate to a portion of a first peripheral surface of the heat producing medium and that generates magnetic flux that acts upon the heat producing medium. A magnetic flux adjuster is rotatably positioned on a second peripheral surface of the heat producing medium, opposite the first peripheral surface, has a paper passage area magnetic flux adjustment unit that causes a magnitude of magnetic flux acting upon a paper passage area of the heat producing medium to vary depending upon whether the paper passage area magnetic flux adjustment unit is positioned close to and facing the magnetic flux generator or is positioned far from the magnetic flux generator, and a paper non-passage area magnetic flux adjustment unit that has a different rotational phase from the paper passage area magnetic flux adjustment unit and that causes a magnitude of magnetic flux acting upon a paper non-passage area of the heat producing medium to vary depending upon whether the paper non-passage area magnetic flux adjustment unit is positioned close to and facing the magnetic flux generator or is positioned far from the magnetic flux generator, and that rotates during a fixing operation for each sheet of recording paper and periodically changes the magnitude of magnetic flux acting upon the heat producing medium at different timings between the paper passage area and the paper non-passage area. A synchronization controller periodically controls, for each sheet of recording paper, a timing of magnetic flux generation by the magnetic flux generator in synchronization with rotational phases of the magnetic flux adjustment units of the magnetic flux adjuster. A calorific value distribution across a width of the heat producing medium is adjusted by changing the timing of the magnetic flux generation that is periodically controlled by the synchronization controller and by changing a spatial distribution of the magnetic flux acting upon the heat producing medium

It is respectfully submitted that neither of the two references relied upon by the Examiner, even if combined as proposed by the Examiner in the outstanding Official Action

contain disclosures that are adequate or sufficient to teach the above noted combination of features, which define an aspect of the present invention.

Although the metes and bounds of the present invention are defined by the terms of the claims, to facilitate and to emphasize the distinctions between the present invention and the disclosures of the references relied upon, Applicants will herebelow paraphrase the above noted features in a nonlimiting fashion.

In particular, the present invention includes a magnetic flux generator and a magnetic flux adjuster that are positioned on opposite sides of a heat producing medium. Further, the magnetic flux adjuster is made up of, for example, two units, a paper passage area magnetic flux adjusting unit that adjusts the magnetic flux acting upon the paper passage area of the heat producing medium and a paper non-passage area magnetic flux adjusting unit that adjusts the magnetic flux acting upon the paper non-passage area of the heat producing medium. Additionally, the phase of rotation (i.e. position) of the paper passage area magnetic flux adjusting unit and the phase of rotation (i.e. position) of the paper non-passage area magnetic flux adjusting unit are different. Due to the rotation of the units, the respective magnetic flux adjusting units are repeatedly positioned close to and spaced from the magnetic flux generator. Moreover, the magnetic flux adjuster rotates during the fixing operation for each sheet of recording paper. Yet further, the rotation of the magnetic flux adjuster is synchronized with the timing of the magnetic flux generation in the magnetic flux generator. Each of these features are reflected in the pending claims of the present application, which patentably distinguish and define over the disclosures of the references applied thereagainst.

According to the present invention, by rotating the magnetic flux adjuster, that includes a plurality of magnetic flux adjusting units, which changes the magnitude of magnetic flux acting

upon a heat producing medium depending on whether respective ones of the magnetic flux adjusting units are positioned close to and facing the heat producing medium or are positioned spaced from the heat producing medium, by repeating the movement of the magnetic flux adjusting units between the close to position and the spaced from position, with respect to the magnetic flux generator, in different rotational phases, and by controlling the timing of magnetic flux generation in dependence upon the rotation of the magnetic flux adjuster, the timewise distribution of magnetic flux generation (i.e. heating) is converted to a spatial distribution of magnetic flux (i.e. calorific values).

According to the teachings of the present invention as disclosed herein, a magnetic flux adjusting unit can take the form of either a magnetic core or a shielding element or plate having good electrical conductivity. In other words, the magnetic flux adjusting unit may include a ferrite core that intensifies the magnetic flux (i.e. increases the magnetic permeability) when positioned close to the magnetic flux generator in contrast to when the unit is positioned spaced from the magnetic flux generator. Yet further, the magnetic flux adjusting unit according to the present invention can include a shield element or plate and a restraint coil formed of an electrically conductive material that reduces the magnetic flux.

The above noted feature of the present invention, of synchronizing the rotation of the magnetic flux adjuster and the timing of magnetic flux generation by the magnetic flux generator can be embodied by repeatedly switching the conductive and non-conductive states of the excitation coil during the fixing operation, for each sheet of recording paper and by synchronizing the timing of the switching (of the conductive and non-conductive states) with the rotational phases of the magnetic flux adjuster during the rotation of the magnetic flux adjuster.

In this regard, the Examiner's attention is respectfully directed to the specification of the present application at page 36, line 15, to page 42, line 4.

In direct contrast to the above noted features of the present invention, as embodied in the claims, KAWASE et al. discloses magnetic cores 6b and 6c which appear to be somewhat related to the paper passage area and the paper non-passage area magnetic flux adjustment units. However, the cores 6b and 6c are bonded to a rotatable core supporting member 4 and are positionable at two positions that are spaced from each other by 180°, under the control of the circuit 34, motor 20, and driver 35, as set forth in paragraphs [0064], [0069], [0072] and [0073]. In other words, the magnetic cores 6b and 6c merely switch between two predetermined angular positions, but do not rotate during a fixing operation as explicitly recited in Applicants' claims.

Yet additionally, KAWASE et al. does not disclose rotating the cores during a fixing operation for a single sheet of recording paper. Rather, depending on the size of the recording paper, the cores are positioned in one or the other of their diametrically opposite positions. Accordingly, KAWASE et al. does not disclose varying the rotational phases of the paper passage area magnetic flux adjusting unit and of the paper non-passage area magnetic flux adjusting unit. KAWASE et al. also does not disclose that the magnetic flux adjuster rotates during the fixing operation for each sheet of recording paper. Further, KAWASE et al. does not disclose synchronization of the rotation of the magnetic flux adjuster with the timing of the magnetic flux generation in the magnetic flux generator.

In setting forth the rejection, the Examiner admits that KAWASE et al. does not disclose, inter alia, the continuous rotation of the magnetic core, but relies upon SEKIGUCHI for this teaching. In particular, the Examiner asserts that SEKIGUCHI teaches (citing paragraph [0111] of SEKIGUCHI), a rotating shield to adjust the temperature of the rotatable image heating

apparatus. However, the magnetic field blocking member 150 of SEKIGUCHI is movable between three positions, but does not rotate during a fixing operation for single sheet of paper. In particular, the three positions are shown in figure 7(a), 7(b) and 7(c) as described in paragraphs [0056] and [0110]. Accordingly, SEKIGUCHI cannot overcome the above noted deficiencies of KAWASE et al.

Applicants further note that the above noted features of the present invention enable the adjustment of the calorific value distribution of the heat producing medium without without requiring the use of a mechanical switching mechanism but merely relies on the rotation of the paper passage area and non-paper passage area magnetic flux adjustment units without requiring a mechanism, such as is utilized by both KAWASE et al. and SEKIGUCHI to position the rotatable cores in either of the predetermined positions. This advantage of the present invention over the structure required by the prior art applied by the Examiner is explicitly set forth at page 15, lines 17 through 26 of the present application.

At least for each of the above noted reasons and certainly for all of the above noted reasons it is respectfully submitted that all of the claims in the present application are clearly patentable over the combination of references relied upon by the Examiner. An action to such effect is respectfully requested in due course.

Claims 2, 18 and 19 are also submitted to the patentable over the combination of documents relied upon by the Examiner with respect to the independent claims, based upon their dependence from a shown to be allowable base claim as well as based upon their own specific recitations, in the claimed combinations.

Applicants note with appreciation and obvious acquiescence, the Examiner's indication that claims 12, 13 and 26 are allowable. Applicants also note with appreciation the Examiner's

indication that claims 3-9, 14-16, 20-24 and 27 are merely objected to for being dependent upon a rejected base claim but would be allowable if rewritten into independent form including all of the limitations of the base claim and any intervening claims. In this regard, Applicants assume that the Examiner's inclusion of claim 27 with the objected to claims is in error as claim 27 depends from claim 13, which has been indicated to be allowable.

Accordingly, reconsideration and withdrawal of each of the outstanding objections and rejections is respectfully requested, together with the passage of the present application to issue, in due course.

## SUMMARY AND CONCLUSION

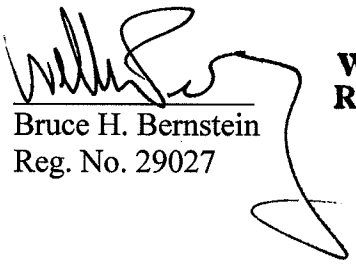
Applicants have made a sincere effort to place the present application in condition for allowance and believe that they have now done so. Applicants have amended the specification, submitted a new title, and revised the claims to enhance clarity while not narrowing the scope of the claims. Applicants have additionally responded to the Examiner's objection to the claims and have explained how the recitations of the claims clearly and accurately define the present invention, as disclosed in the specification thereof

Applicants have discussed the present invention as reflected in the claims and with respect thereto, have distinguished the same from the disclosure of the references relied upon by the Examiner in the proposed combination. Applicants have pointed out the features of the present invention and have contrasted the same with the combined disclosures of the two references relied upon. Applicants have additionally noted the explicit language of the pending claims that are not disclosed by the references applied thereagainst. Accordingly, Applicants have provided a clear evidentiary basis supporting the patentability of all the claims in the present application and respectfully request an Official Action to such effect, in due course.

Any amendments to the claims which have been made in this amendment, and which have not been specifically noted to overcome a rejection based upon the prior art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

Should the Examiner have any questions or comments regarding this Response, or the present application, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully Submitted,
Kenji ASAKURA



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